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WATERSHED MANAGEMENT POLICY

Document Title: **Regulatory Requirements for Closed Loop Geothermal Heat Pump Wells**

Effective Date: Policy Number: BRP/DWM

Program Applicability: BRP, Watershed Permitting, Groundwater Discharge Program
BRP, Watershed Permitting, Underground Injection Control Program

Approved By: Glenn S. Haas, Director, Division of Watershed Management

Supersedes Policy: None

Purpose: This policy describes the regulatory requirements for closed-loop geothermal heat pump wells, as defined below. The policy outlines which permittees are subject to the provisions of the Groundwater Discharge Permit Program, 314 CMR 5.00 or the Underground Injection Control (UIC) Regulations, 310 CMR 27.00.

Applicability: This policy provides guidance to the Department and permittees regarding the use and regulatory requirements for closed-loop geothermal heat pump wells.

Introduction: The Department, in accordance with the requirements of 314 CMR 5.00, has required any geothermal well(s) with an aggregate flow greater than 15,000 gallons per day (gpd) to obtain a groundwater discharge permit. There are a number of geothermal heat pump well systems, including open-loop and closed-loop. This policy only applies to closed-loop systems.

A geothermal heat pump system is defined as an electrically powered system that utilizes energy in the form of the earth's relatively constant temperature to provide heating and cooling. A vertical closed-loop geothermal heat pump well is a well or borehole drilled to a specific depth either singly or in series where a continuous closed-loop of pipe is inserted from one well to another for the purpose of non-contact thermal energy transfer from a fluid in the loop to or from

the earth. In an open-loop geothermal heat pump well, there is an actual withdrawal and discharge of water to the environment. Discharge can be either re-injected into a well or to surface water.

Issue: The Department has determined that a closed-loop geothermal heat pump well will not require a groundwater discharge permit under 314 CMR 5.00, regardless of the flow, if the following conditions are met:

1. The closed-loop geothermal well has been registered under the Underground Injection Control Regulations, 310 CMR 27.00.
2. The recirculating fluid used in the closed-loop geothermal well is a non-toxic additive to eliminate any potential impact due to leaks or spills.
3. The closed-loop geothermal well is not located within the Zone I of a public water supply well.
4. The closed-loop geothermal well must have a minimum setback distance of 50 feet from any private water supply well or suction line, or any on-site subsurface sewage disposal system as defined in 310 CMR 15.002.
5. The well must meet grouting standards established by the International Ground Source Heat Pump Association (IGSHPA).

Nothing in this policies alleviates the requirement the well comply with the provisions of 313 CMR 3.00.